

What is claimed is:

1. A substrate treating apparatus having a plurality of treating blocks arranged in juxtaposition, each of the  
5 treating blocks including treating modules for performing required treatments of substrates, and a single main transport mechanism for transferring the substrates to and from the treating modules, wherein:
  - each of said treating blocks includes, as separate

10 components, inlet substrate rests for receiving the substrates to be accepted to the treating block, and outlet substrate rests for receiving the substrates to be delivered from the treating block; and

15 said main transport mechanism of each of said treating blocks is arranged to transfer the substrates through said inlet substrate rests and said outlet substrate rests.
2. A substrate treating apparatus having a plurality of controlled units arranged in juxtaposition, each of the  
20 controlled units including treating modules for performing required treatments of substrates, and a single main transport mechanism for transferring the substrates to and from the treating modules, wherein:
  - each of said controlled units includes, as separate

25 components, inlet substrate rests for receiving the

substrates to be accepted to the controlled unit, and outlet substrate rests for receiving the substrates to be delivered from the controlled unit;

5        said main transport mechanism of each of said controlled units is arranged to transfer the substrates through said inlet substrate rests and said outlet substrate rests;

each of said controlled units includes unit control means for controlling at least a substrate transfer operation of said main transport mechanism; and

10        said unit control means is independently operable to control a series of substrate transports including transfer of the substrates to and from said treating modules and transfer of the substrates to and from said substrate rests.

15        3. A substrate treating apparatus as defined in claim 1, wherein:

      said inlet substrate rests include a feed inlet substrate rest for use in transporting the substrates forward through each of said treating blocks, and a return inlet substrate rest for use in transporting the substrates backward through each of said treating blocks; and

      said outlet substrate rests include a feed outlet substrate rest for use in transporting the substrates forward through each of said treating blocks, and a return outlet substrate rest for use in transporting the substrates

backward through each of said treating blocks.

4. A substrate treating apparatus as defined in claim 3, wherein at least one of said treating blocks has an additional inlet substrate rest and an additional outlet substrate rest besides said feed inlet substrate rest, said return inlet substrate rest, said feed outlet substrate rest and said return outlet substrate rest.
- 10 5. A substrate treating apparatus as defined in claim 3, wherein said feed inlet substrate rest and said return outlet substrate rest are arranged close to each other, and said return inlet substrate rest and said feed outlet substrate rest are arranged close to each other.
- 15 6. A substrate treating apparatus as defined in claim 5, wherein said feed inlet substrate rest and said return outlet substrate rest are arranged vertically, and said return inlet substrate rest and said feed outlet substrate rest are arranged vertically.
- 20 7. A substrate treating apparatus as defined in claim 1, wherein at least one of said substrate rests has a construction for receiving a plurality of substrates in multiple stages.

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8. A substrate treating apparatus as defined in claim 1, wherein at least one of said substrate rests has a shutter mechanism for closing an opening allowing passage of said substrates.

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9. A substrate treating apparatus as defined in claim 1, wherein at least one of said substrate rests has cooling means for cooling the substrates placed thereon.

10 10. A substrate treating apparatus as defined in claim 1, wherein at least one of said substrate rests has horizontal moving means horizontally movable toward said main transport mechanism.

15 11. A substrate treating apparatus as defined in claim 1, wherein said main transport mechanism has at least two holding arms for holding the substrates.

12. A substrate treating apparatus as defined in claim 11,  
20 wherein said main transport mechanism is arranged, when  
transferring substrates to and from one of said inlet substrate  
rests and one of said outlet substrate rests, with one  
of said holding arms holding a substrate, and the other  
holding arm unloaded, to drive said one of said holding arms  
25 and transfer said substrate to said one of said outlet

substrate rests, and thereafter to drive one of said holding arms, both now unloaded, and receive a different substrate from said one of said inlet substrate rests.

- 5    13. A substrate treating apparatus as defined in claim 3,  
wherein:

said main transport mechanism has at least two holding arms for holding the substrates; and  
said main transport mechanism is arranged, when  
10    transferring substrates to and from one of said inlet substrate rests and one of said outlet substrate rests, with one of said holding arms holding a substrate, and the other holding arm unloaded, to drive said one of said holding arms and transfer said substrate to said one of said outlet substrate rests, thereafter to determine whether an abnormality has occurred with a destination forward or backward with respect to a direction of transport through one of said treating blocks or controlled units in which said main transport mechanism is disposed, and when an  
15    abnormality is confirmed, to transport the substrates only in a direction free from said abnormality.

14. A substrate treating apparatus as defined in claim 12,  
wherein:

25        said treating modules include heat-treating modules

having heating plates for heating the substrates and cooling plates for cooling the substrates; and

- said main transport mechanism is arranged to drive one of said at least two holding arms in unloaded state to
- 5 receive a different substrate from one of said inlet substrate rests, to fulfill a condition that, in every transport cycle, the same one of said at least two holding arms receives substrates heated by said heating plates.
- 10 15. A substrate treating apparatus as defined in claim 3, wherein, when said feed inlet substrate rest and said return inlet substrate rest both have substrates placed thereon, said main transport mechanism receives the substrate from said return inlet substrate rest by priority.
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16. A substrate treating apparatus as defined in claim 15, wherein:
- said main transport mechanism has at least two holding arms for holding the substrates; and
- 20 said main transport mechanism is arranged, when transferring substrates to and from said feed inlet substrate rest and said return outlet substrate rest, with one of said holding arms holding a substrate, and the other holding arm unloaded, to drive said one of said holding arms and transfer
- 25 said substrate to said return outlet substrate rest, thereafter

to determine whether said return inlet substrate rest has a substrate placed thereon, when no substrate is found, to drive one of said holding arms in unloaded state and receive a different substrate from said feed inlet substrate rest, and

5       when a substrate is found on said return inlet substrate rest, to move toward said return inlet substrate rest, without receiving the substrate from said feed inlet substrate rest, and with all said holding arms in unloaded state, and receive the substrate from said return inlet substrate rest

10      for a predetermined transport process.

17. A substrate treating apparatus as defined in claim 2,  
wherein:

      said inlet substrate rests include a feed inlet substrate rest for use in transporting the substrates forward through each of said controlled units, and a return inlet substrate rest for use in transporting the substrates backward through each of said controlled units; and

      said outlet substrate rests include a feed outlet substrate rest for use in transporting the substrates forward through each of said controlled units, and a return outlet substrate rest for use in transporting the substrates backward through each of said controlled units.

25    18. A substrate treating apparatus as defined in claim 17,

- wherein at least one of said controlled units has an additional inlet substrate rest and an additional outlet substrate rest besides said feed inlet substrate rest, said return inlet substrate rest, said feed outlet substrate rest  
5 and said return outlet substrate rest.
19. A substrate treating apparatus as defined in claim 17, wherein said feed inlet substrate rest and said return outlet substrate rest are arranged close to each other, and said  
10 return inlet substrate rest and said feed outlet substrate rest are arranged close to each other.
20. A substrate treating apparatus as defined in claim 19, wherein said feed inlet substrate rest and said return outlet substrate rest are arranged vertically, and said return inlet substrate rest and said feed outlet substrate rest are  
15 arranged vertically.
21. A substrate treating apparatus as defined in claim 2,  
20 wherein at least one of said substrate rests has a construction for receiving a plurality of substrates in multiple stages.
22. A substrate treating apparatus as defined in claim 2,  
wherein at least one of said substrate rests has a shutter  
25 mechanism for closing an opening allowing passage of said

substrates.

23. A substrate treating apparatus as defined in claim 2,  
wherein at least one of said substrate rests has cooling  
5 means for cooling the substrates placed thereon.
24. A substrate treating apparatus as defined in claim 2,  
wherein at least one of said substrate rests has horizontal  
moving means horizontally movable toward said main trans-  
10 port mechanism.
25. A substrate treating apparatus as defined in claim 2,  
wherein said main transport mechanism has at least two  
holding arms for holding the substrates.  
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26. A substrate treating apparatus as defined in claim 25,  
wherein said main transport mechanism is arranged, when  
transferring substrates to and from one of said inlet sub-  
strate rests and one of said outlet substrate rests, with one  
20 of said holding arms holding a substrate, and the other  
holding arm unloaded, to drive said one of said holding arms  
and transfer said substrate to said one of said outlet  
substrate rests, and thereafter to drive one of said holding  
arms, both now unloaded, and receive a different substrate  
25 from said one of said inlet substrate rests.

27. A substrate treating apparatus as defined in claim 17,  
wherein:

said main transport mechanism has at least two holding arms for holding the substrates; and

5           said main transport mechanism is arranged, when transferring substrates to and from one of said inlet substrate rests and one of said outlet substrate rests, with one of said holding arms holding a substrate, and the other holding arm unloaded, to drive said one of said holding arms  
10          and transfer said substrate to said one of said outlet substrate rests, thereafter to determine whether an abnormality has occurred with a destination forward or backward with respect to a direction of transport through one of said treating blocks or controlled units in which said  
15          main transport mechanism is disposed, and when an abnormality is confirmed, to transport the substrates only in a direction free from said abnormality.

28. A substrate treating apparatus as defined in claim 26,  
20          wherein:

said treating modules include heat-treating modules having heating plates for heating the substrates and cooling plates for cooling the substrates; and

25          said main transport mechanism is arranged to drive one of said at least two holding arms in unloaded state to

receive a different substrate from one of said inlet substrate rests, to fulfill a condition that, in every transport cycle, the same one of said at least two holding arms receives substrates heated by said heating plates.

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29. A substrate treating apparatus as defined in claim 17, wherein, when said feed inlet substrate rest and said return inlet substrate rest both have substrates placed thereon, said main transport mechanism receives the substrate from  
10 said return inlet substrate rest by priority.

30. A substrate treating apparatus as defined in claim 29, wherein:

said main transport mechanism has at least two holding arms for holding the substrates; and  
15       said main transport mechanism is arranged, when transferring substrates to and from said feed inlet substrate rest and said return outlet substrate rest, with one of said holding arms holding a substrate, and the other holding arm  
20       unloaded, to drive said one of said holding arms and transfer said substrate to said return outlet substrate rest, thereafter to determine whether said return inlet substrate rest has a substrate placed thereon, when no substrate is found, to drive one of said holding arms in unloaded state and receive  
25       a different substrate from said feed inlet substrate rest, and

when a substrate is found on said return inlet substrate rest,  
to move toward said return inlet substrate rest, without  
receiving the substrate from said feed inlet substrate rest,  
and with all said holding arms in unloaded state, and

- 5 receive the substrate from said return inlet substrate rest  
for a predetermined transport process.

31. A substrate treating apparatus as defined in claim 2,  
wherein said unit control means is connected to main control  
10 means for performing an overall control thereof, said main  
control means being constructed to communicate with a host  
computer separate from said substrate treating apparatus.